

# STANDARD ABBREVIATIONS

The list of abbreviations given below is not comprehensive; these abbreviations may or may not be incorporated into the Contract Documents and abbreviations not listed may be used. Periods may or may not be shown after the abbreviation.

Abbreviations are given usually for the singular case - for the plural case, the same abbreviation without adding the 's' may be used.

While upper case letters are shown, either upper case or lower case letters may be used in Specifications.

The following is listed alphabetically by the complete word, not by the abbreviation.

ABBREVIATION	COMPLETE WORD
ASD	Allowable Stress Design
ALT	Alternate
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ASCE	American Society of Civil Engineers
AMS	American Welding Society
+	And
Δ	Angle
APPROX	Approximate
ARCH	Architectural
AK	At K (length unit) on Center
B to B	Back to Back
BENT	Basement
BN	Beam
BRG	Bearing
BT	Between
BLK	Block (as for steel beams)
BLDG	Building
BF	Both Faces
BS	Both Sides
BOT	Bottom
BLOG	Building
C, also I	Channel
CAN or C	Canister
CANTILE	Canister
CIP	Cast-in-Place (Concrete)
CL	Center
CTR	Center Line
CL	Center of Gravity
CL to C	Center to Center
CHAM	Chamber
CUB	Cubic
CL	Column
CJP	Complete Joint Penetration (Weld)
CONC	Concrete
CMU	Concrete Masonry Unit
CRSI	Concrete Reinforcing Steel Institute
CONJ	Connection
CONSTR	Construction
CONSTR JT	Construction Joint
CONT	Continuous or Continue
CP or CT or CONTROL JT	Control Joint
COR	Corrosion
CUB	Cubic
CU FT or FT <sup>3</sup>	Cubic Foot
CU IN or IN <sup>3</sup>	Cubic Inch
CU YD or YD <sup>3</sup>	Cubic Yard
D or DL	Dead Load
DEFL	Deflection
DEG, also °	Degree
DET	Detail
DIAG	Diagonal
DISC, also D	Disc
DIAM	Diameter
DISC	Disc
DO	Down
DWG	Drawing
EA	Each
EF	Each Face
EW	Each Way
E	East (also Modulus of Elasticity)
EW	East-West
ELEC	Electrical
EQ	Equal
EQUP	Equipment
EQUIV	Equivalent
EXIST	Existing
EXP JT	Expansion Joint
EXT	Exterior
FF	Far Face
F	Far Side
FIG	Figure
FIN	Finish
FIN FL	Finish Floor
FIN GR	Finish Grade
FP	Fireproofing
FL	Floor, Floor Line
FP, also F	Foot
GA	Gage, Gauge
GALV	Galvanized
GEN	General
GR	Grade, Grading
HT	Height
HCM	Horizontal
H	High
HP	High Point
HR	Horizontal
H	Horizontal (Force)
IN, also "	Inch
INCL	Include(d), (ing)
IO	Inside Diameter
IF	Inside Face
INT	Interior
JT	Joint
K	Kip
K-FT	Kip-Feet
KIP	Kips per Linear Foot
KIP	Kips per Square Foot
KIP	Kips per Square Inch
K	Kilohertz
L	Length
LT	Light
LN	Lightweight
LN	Linear
L or LL	Live Load
LRFD	Load and Resistance Factor Design
LEED	Long Legs Back to Back (for angles)
LS	Long-Slotted (Bolt Hole)
LP	Low Point
MFR	Manufacturer(s)
MR	Mark
MATL	Material
MAX	Maximum
MCH	Mechanical
MOD	Modulus
MEMB	Member
MEM	Membrane
MIN	Minimum
MISC	Miscellaneous
MC	Miscellaneous Channel
E	Modulus of Elasticity
M	Moment

# ABBREVIATION

ABBREVIATION	COMPLETE WORD
MF	Near Face
MS	Near Side
NEG	Negative
NOM	Nominal
NW	Nominal Weight (concrete)
N	North
N-S	North-South
NIC	Not In Contract
NR	Not Reducible (Live Load)
NRS	Not To Scale
NO, also 0	Number
OC	On Center(s)
OP	Opening
OPP	Opposite
OS	Outside (round bolt hole)
OD	Outside Diameter
OF	Outside Face
OSL	Outstanding Leg
O TO O	Out To Out
PP	Partial Penetration Weld
PERM	Permanent
PERP, also ⊥	Perpendicular
PC	Piece
PC MK	Piece Mark
PL	Plate
PT	Point
LB	Pound
PCF	Pounds per Cubic Foot
PLF	Pounds per Linear Foot
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PRELIM	Preliminary
PROV	Provide(d)
R	Radius
REF	Reference
REIN	Reinforced (ing), (ment)
REBAR	Reinforcing Bar
RELUC	Relocate
REQD	Required
REV	Reverse(d) (ion-s)
RD, also O	Round
SCHED	Schedule(d)
SEC, also "	Second
SECT	Section
SH	Sheet
SLB	Short Legs Back to Back
SL	Short-Slotted (Bolt Hole)
SLN	Similar
SK	Sketch
SLOT	Slot (ted)
S	South
SPEC	Specification(s)
SO, also sq	Square
SO FT or FT <sup>2</sup>	Square Foot
SO IN or IN <sup>2</sup>	Square Inch
STAG	Staggered
SS	Stainless Steel
STD	Standard
STL	Steel
STIFF	Stiffener
STRUCT	Structural
SDL	Superimposed Dead Load
SYN	Symmetrical
T	Tree Section
TS	Tube (Structural)
TEMP	Temperature
TEMP	Temporary
TH	Thickness
THRU	Through
TOL	Tolerance
TOP	Top of Concrete
TOP	Top of Steel
TV	Typical
ULT	Ultimate
UNL	Underwriter's Laboratory, Inc.
UNL	Unless Otherwise Noted
V	Verify in Field
VERT	Vertical
V	Vertical (Reaction or Force)
WASH	Washer
WT	Weight
WMP	Welded Wire Fabric
W	West
W	Wide
W	Wide Flange
W	Width
W or WL	Wind Load
W	With
WO	Without
WP	Working Point
XCC	Double Extra Strong (Pipe)
XS	Extra Strong (Pipe)
Y	Yard
YS	Yield Stress (steel)
Z	See

# STRUCTURAL DESIGN CRITERIA

This structural design criteria of the project is for general information only and does not modify, alter or overrule the Specifications or the Contract Drawings.

## A. CODES

The design meets or exceeds the requirements of the following codes. In some instances, the more stringent requirements have been applied where appropriate.

1. Building Code of the City of New York, 1993 and subsequent supplements.
2. Load and Resistance Factor Design Specification for Structural Steel Buildings, 1 September 1986, with Supplement No. 1, 1 January 1989, (AISC-LRFD), by American Institute of Steel Construction.
3. AWS/AWS D1.1, 1990, Structural Welding Code - Steel.
4. ACI 318-89, Building Code Requirements for Reinforced Concrete by American Concrete Institute.

## R. CRACKING LOADS

The loads that follow do not include the weight of structural steel members. Normal weight concrete is taken at a unit weight of 150 pcf. Light weight concrete is taken at a unit weight of 117 pcf. Live loads are reducible except where noted as not reducible. The following are dead, superimposed dead and live loads taken for each occupancy category:

	psf	Notes
<b>1. BULKHEAD FLOOR</b>		
Construction Dead Load		
- 4" lightweight concrete slab over 2" metal deck	53	
Superimposed Dead Load		
- fireproofing	2	
- equipment allowance	2	(1)(3)
Total Superimposed Dead Load	4	(1)(3)
Total Dead Load	57	(1)(3)
Live Load	75	LR (2)
<b>2. BULKHEAD ROOF</b>		
Construction Dead Load		
- 1 1/2" roof metal deck	3	
Superimposed Dead Load		
- mechanical/electrical hung from below	10	(1)
- roof finish	20	
- 1 1/2" to 4" tapered insulation		
- waterproofing membrane		
- 1 1/2" pavers		
Total Superimposed Dead Load	30	(1)
Total Dead Load	33	(1)
Live Load	40	LR
<b>3. FUEL OIL TANK ROOM ROOF</b>		
Construction Dead Load		
- 1 1/2" lightweight concrete slab over 2" metal deck	58	
Superimposed Dead Load		
- fireproofing	2	
- mechanical/electrical hung from below	10	
Total Superimposed Dead Load	12	
Total Dead Load	70	
Live Load	30	
<b>4. BULKHEAD PERIMETER WALL</b>		
A wall load of 20 psf for wall surface area is considered around the Bulkhead. The framing of the Bulkhead Floor and the framing of the Bulkhead Roof are each designed to carry the full weight of the perimeter wall. The intermediate tube beam is designed to carry a 10 psf wall load (of wall surface area) between the beam and the Bulkhead Roof.		
<b>5. 5 WTC FUEL OIL LINES</b>		
a) Vertical Runs		
The weight of 2" fuel lines, weighing 6 pcf each, between the 5 WTC Roof and the 299 Level, are considered to be supported at the 299 Level. Fuel lines are enclosed by 8" CD walls inside the shaft weighing 55 pcf (of wall surface area). Fuel pipe supports are provided at every floor.		
b) Horizontal Runs		
Two 2" fuel pipes inside an 8" SCH40 encasement pipe, all weighing 35 pcf, are considered to be hung from the 5 WTC Roof (Floor 30), between the Generator Room and the riser shaft, and from the 299 Level, between the riser shaft and the Fuel Tank Room.		
Vertical supports for the fuel lines are assumed to be at approximately 10 to 12 ft. on center.		
The fuel line is considered to be enclosed by a 2 hour fire rated gypsum board enclosure, weighing approximately 45 pcf, directly attached to the structure.		
<b>6. ELECTRIC CABLES</b>		
a) Vertical Runs		
Armored cables, weighing 15 pcf each, inside 5" rigid conduits, weighing 13 pcf each, are considered in the riser shafts at 5WC, 2WC and 1WC. The number of cables are shown in the Contract Drawings. Per JPLA, the total weight of cable and conduit (28 pcf) is assumed uniformly distributed between all conduit supports in the run. Conduits are supported at every floor.		
b) Horizontal Runs		
Unless otherwise noted, cables, weighing 8 pcf each, inside 5" rigid conduits, weighing 13 pcf each, are considered to be hung from the existing structure. See mechanical drawings for routing of cables. All concrete encasement, weighing 85 pcf for each conduit, is added where the encasement is indicated in the mechanical drawings. Vertical supports for the cables (and the encasement where required) are assumed to be at approximately 5 ft. on center.		
<b>7. FUEL OIL TANK ROOM</b>		
It is assumed that one tank may burst, causing the Tank Room to flood to a level of 2.8 ft. The CD walls surrounding this room are capable of resisting the hydrostatic pressures associated with this flooding.		